EFFICACY REVIEW

Product: **Kaput®Pocket Gopher Bait**

Date: May 3, 2004

EPA File Symbol: 72500-O

DP Bar code: D300172

Chemical Code(s): 067701

Formulation: 0.005% Diphacinone

Purpose for Review: The purpose for this review is to determine if the new product is efficacious on pocket gophers is efficacious.

MRID(s): **45768103** Baroch, J. and V. Malkov. 2002. Field Efficacy of Kaput Pocket Gopher Bait (0.005% Diphacinone) for the Control of the Plains Pocket Gopher (*Geomys bursarius*) Genesis Laboratories. Unpublished Report. 42pp. Study #02011.

Good Laboratory Practices: No

Branch Supervisor: Meredith Laws, Branch Chief

Team Reviewer: John Hebert, Product Manager -PM Team 07

IRB Reviewer: Geraldine R. McCann, Biologist

BACKGROUND: Pocket gophers are found only in the western hemisphere from Panama to Alberta, Canada and from California to the Illinois, Missouri, Arkansas, and Louisiana. The Southeastern pocket gopher (Geomys pinetis) is the only pocket gopher in Southeast Alabama, Georgia, and Florida. Pocket gophers cause damage which may include destruction of underground utility cable and irrigation pipes, direct consumption and smothering of forage with earthen mounds. They damage trees by stem girdling and clipping, root pruning, and their tunnel in ditch banks hasten soil erosion and water loss. There is currently only one diphacinone product registered for use on pocket gophers and it is a 24 (c) Special Local Need product (CA030007 Gopher Getter Type 2 Bait by Wilco-approved December 1998). Diphacinone is one of the more toxic indandione anticoaglulants and is usually formulated at 0.005%. This review considers the efficacy of a new product for pocket gopher control: Kaput™ Pocket Gopher Bait (MRID 45753801) and the proposed label. The Pesticide Assessment Guidelines used to assess the efficacy test was Subdivision G, Section 96-14 (e) Rodenticides on farm and rangelands.

REVIEW OF DATA:

45768103 Baroch, J. and V. Malkov. 2002. Field Efficacy of Kaput Pocket Gopher Bait (0.005% Diphacinone) for the Control of the Plains Pocket Gopher (*Geomys bursarius*) Genesis Laboratories. Unpublished Report. 42pp. Study #02011.

DISCUSSION: Genesis Laboratory, Inc. conducted this study to determine the efficacy of a pocket gopher bait (Kaput™ Pocket Gopher Bait) with diphacinone (0.005%) to control *Geomys bursarius, Thomomys bottae, T. talpoides, T. mazama, T. bulbivorus, and T. monticola* according to the proposed label. This field study was conducted in May 2002, in a pasture on the flood plain of the Big Thompson River just west of Loveland, Colorado, in Larimer County. The Plains pocket gopher (*Geomys bursarius*) and the Northern pocket gopher (*T. talpoides*) are the two species located in this range. There were 2 treated plots and 2 control plots. The Plains pocket gopher was trapped and identified at the above site in the spring of 2001. The activity level of the population was evaluated before and after the application of the test substance using two methods: open burrow and carrot bait take methods. "In order to have two independent activity indices on each burrow system, a second burrow was located with a probe within two to five meters of the open burrow and a piece of fresh carrot was dropped into the probe hole." The pretreatment activity survey took place May 3, 2002.

The bait was applied May 7, 2002. The KaputTM Pocket Gopher Bait is a dyed red wheat berry coated with the active ingredient (diphacinone). The control plots were treated first with "clean whole wheat berries". Bait was applied to the burrow systems as described on the label: a level ½ cup of bait poured into the burrow through a funnel with two to three placements made per burrow system.. The hole was plugged with a wad of grass and marked with flagging. The carrot census plots were baited first on the treated plots with two to three placements made per burrow system. The amount of clean wheat applied to the control areas was 12,400 g (27.34 Lbs) and the amount of treated pocket gopher bait applied to the treated plots was 38650 g (85.21 Lbs). The amount of treated bait applied per acre of land used for the test averaged 0.0488 lbs per acre.

"Temperatures at the site ranged from -9 °C to 34 °C (15.8 °F to 93.2 °F during the study 21 days). Relative humidity ranged from 5 to 98 %. Three millimeter of precipitation, which fell in the form of a snow/rain mix, fell on the site during the second 24 hours of the pretreatment activity counts. A total of 69.9 mm of precipitation fell at the site during the study, the bulk of it in a 47 mm rain storm on day 17 of the posttest period. Due to the fossorial habit of pocket gophers, the weather condition are not considered to have affected the conduct or outcome of the study."

The following tables were derived from the raw data and show the measure of activity on each plot from each censussing technique:

Plot 1 Control - Kaput™ Pocket Gopher Bait (0.005% diphacinone on wheat bait)

Open Hole Technique			Carrot Bait Technique	
Pretreatment	Midtreatment	Posttreatment	Pretreatment	Posttreatment
19/25	19/25	16/25	23/23	18/23
12 % less than initial pretreatment population			22 % less	

# of open holes active/# holes opened # carrots missing or chewed/# carrots placed

Plot 2 Treated - Kaput™ Pocket Gopher Bait (0.005% diphacinone on wheat bait)

Open Hole Technique			Carrot Bait Technique	
Pretreatment	Midtreatment	Posttreatment	Pretreatment	Posttreatment
17/20	3/21	3/21	19/20	2/20
68.2 % less than initial pretreatment population			85.0 % less	(76.6%)

# of open holes active/# holes opened # carrots missing or chewed/# carrots placed

Plot 3 Control- Kaput™ Pocket Gopher Bait (0.005% diphacinone on wheat bait)

Open Hole Technique			Carrot Bait Technique	
Pretreatment	Midtreatment	Posttreatment	Pretreatment	Posttreatment
12/19	13/19	13/19	16/19	11/19
5 % less than initial pretreatment population			26% less	

# of open holes active/# holes opened # carrots missing or chewed/# carrots placed

Plot 4 Treated- Kaput™ Pocket Gopher Bait (0.005% diphacinone on wheat bait)

Open Hole Technique			Carrot Bait Technique	
Pretreatment	Midtreatment	Posttreatment	Pretreatment	Posttreatment
17/24	0/24	4/24	14/21	3/24
54.17 % less than initial pretreatment population			48.89 % less	(51.53%)

# of open holes active/# holes opened # carrots missing or chewed/# carrots placed

A single underground application of Kaput™ Pocket Gopher Bait (0.005% diphacinone) did reduce the population of pocket gophers in May 2002. Overall efficacy for this treatment according to my calculations from the raw data for both indirect activity indexes was 64.06%. Just using open hole was 61.18 % and

carrot bait was 66.94% reduction in activity. No pocket gopher or non-target carcasses were found on the surface and the study posttreatment assessment was 21 days.

Efficacy Comments

1. The OPP guideline 96-12 (Commensal Rodenticide Tracking Powders) was stated to be the guideline of choice on the cover sheet of the report, and 96-14 (Rodenticides on Farm and Rangelands) is the correct guideline to have been used. The Standard says : The purpose of these studies is to assess the effectiveness of the active ingredient and bait formulations under actual use conditions. One efficacy study should be run for each species claimed or implied to be controlled, for each claimed use site, and for each major region in which the target species is considered a pest. There are several species listed on the label that are not tested in these trials. The most commonly used method of indirect activity censussin, involves distrubing burrow systems, marking them, and returing 24-48 hours later to determine wheather the systems have been restored to their predisturbed state and species typical condition. These criteria were satisfied.

2. At least 25 (the more the better) active burrow systems should be censussed per study plot. In certain cases, other indirect activity censussing procedures may be appropriate. The Carrot Bait method is okay to use. The study plots were not of equal size for comparison. All plots did have about the same number of burrows opened.

3. To be considered acceptable, studies must be conducted using appropriate procedures, and must show posttreatment reductions of at least 70 % from pretreatment levels of target rodent activity acoording to both census methods, after mathematical adjustments have been made for any posttreatment delines in rodent numbers or activity detected on check plots. This is the only criteria the study failed to meet completely. The overall efficacy was 64.06% and the registrant has verified that their product does have some efficacy value.

CONCLUSION(S):

The efficacy report (MRID 45768103) for Kaput™ Pocket Gopher Bait (0.005% diphacinone) for control of Plains pocket gophers submitted in support of the new product is acceptable.

Label Review:

1. Replace Kills with Controls under the name of the product.

2. In the "NOTE TO PHYSICIAN" line, add: "OR VETERINARIAN".

3. In the ENVIRONMENTAL HAZARDS statement, add "This pesticide is toxic to birds and mammals." per the Label Review Manual 8-5, E.